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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,324	04/26/2001	Jonathan Yen	10007849-1	9353

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EXAMINER	
JOHNS, ANDREW W	
ART UNIT	**PAPER NUMBER**
2621	

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/844,324	YEN ET AL.	
	Examiner	Art Unit	
	Andrew W. Johns	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,15-17 and 20* is/are rejected.

7)☒ Claim(s) *4-14,18 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3,4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-3 and 15 are rejected under 35 U.S.C. § 102(a) as being anticipated by Hel-Or (article from the 2000 Int. Conf. on Image Processing entitled "Copyright Labeling of Printed Images).

Hel-Or teaches a method of detecting information embedded in an image (see section 4, decoding, on pages 703-704), comprising, for each of two or more different halftone modulations (i.e., dither cells C_0 and C_1; page 703, second column, lines 6-7), applying a respective filter to the image (page 703, second column, final five lines and page 704, first column, first five lines; the filtering includes calculating an average value of a region and applying the respective dither cells to a constant colored region having this average value) to identify an ordered sequence of halftone modulations embedded in the image (page 703, first column, final three lines; the decoding determines the sequence of dither cells (i.e., modulations) used to create the halftone pattern in the image), as stipulated by claim 1. In addition, Hel-Or also teaches that each halftone modulation is generated from a respective dither matrix (i.e., dither cells C_0 and C_1; see the first paragraph in the first column on page 703), as further required by claim 2; and that each filter corresponds to a matched filter for a respective halftone modulation (i.e., for each modulation the corresponding, or matched, dither cell is applied to the constant colored region having the average value), as additionally set forth in claim 3. Finally, Hel-Or also teaches that

the ordered sequence of halftone modulations is identifiable without knowledge of an original image corresponding to the image before halftone modulation (page 703, second column, lines 7-9; the original image is unknown unknown to the decoding algorithm), as required by claim 15. Therefore, Hel-Or meets each of the limitations of these claims and anticipates the claimed invention.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 16-17 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hel-Or as applied to claims 1-3 and 15 above, and further in view of Cass et al. (US 6,141,441 A).

Hel-Or teaches applying a respective filter to the image (page 703, second column, final five lines and page 704, first column, first five lines; the filtering includes calculating an average value of a region and applying the respective dither cells to a constant colored region having this average value) to identify an ordered sequence of two or more different halftone modulations (page 703, first column, final three lines; the decoding determines the sequence of dither cells (i.e., modulations) used to create the halftone pattern in the image) embedded in the image for each of the halftone modulations (i.e., dither cells C_0 and C_1; page 703, second column, lines 6-7), as required by claim 16, and for each of two or more different halftone modulations (i.e., dither cells C_0 and C_1; page 703, second column, lines 6-7), applying a respective filter to the

image (page 703, second column, final five lines and page 704, first column, first five lines; the filtering includes calculating an average value of a region and applying the respective dither cells to a constant colored region having this average value) to identify an ordered sequence of halftone modulations embedded in the image (page 703, first column, final three lines; the decoding determines the sequence of dither cells (i.e., modulations) used to create the halftone pattern in the image), as stipulated by claim 20. In addition, Hel-Or also teaches that each halftone modulation corresponds to a respective dither matrix (i.e., dither cells C_0 and C_1; see the first paragraph in the first column on page 703) and each filter corresponds to a matched filter for a respective dither matrix (i.e., for each modulation the corresponding, or matched, dither cell is applied to the constant colored region having the average value), as further defined in claim 17.

However, Hel-Or fails to specifically teach a system including a decoder for performing these operations, as additionally required by claims 16-17, or a computer program residing on a computer-readable medium including instructions that cause a computer to perform these operations, as further stipulated by claim 20.

Chen et al. teaches a system for decoding information embedded into image information using modulation patterns (the decoding is generally described beginning at column 28, line 21, and is diagrammatically shown as 800 in Figure 43; the system is shown in Figure 47 and described at column 35, line 30 through column 36, line 12) which includes a decoder (i.e., the processor decodes the data in accordance with stored instructions; column 35, lines 57-60) for decoding the embedded information. Chen et al. also teaches a computer program (i.e., instructions; column 35, lines 55-57) for instructing the computer to perform the decoding operations, this computer program residing on a computer-readable medium (i.e., data storage medium 170; column 35, lines 54-55).

Because the use of such programmed processing systems is extremely conventional and provides for an efficient and convenient implementation to a vast array of image processing methods, it would have been readily obvious to one of ordinary skill in the art to use such a programmed system to implement the method of Hel-Or. Therefore, the invention, as defined in claims 16-17 and 20 would have been obvious to one of ordinary skill in the art at the time of the invention.

Allowable Subject Matter

5. Claims 4-14 and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The various references cited each teaches the use of halftone modulations to embed information into images, but none teaches the use of a respective filter for each halftone modulation to identify an ordered sequence of modulations in the halftoned image.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Johns whose telephone number is (703) 305-4788. The examiner in normally available Monday through Friday, at least during the hours of 9:00 am to 3:00 pm Eastern Time. The examiner may also be contacted by e-mail using the address: andrew.johns@uspto.gov. (Applicant is reminded of the Office policy regarding e-mail communications. See M.P.E.P. § 502.03)

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached on (703) 305-4706. The fax phone number for this art unit is (703) 872-9306. In order to ensure prompt delivery to the examiner, all unofficial communications should be clearly labeled as "Draft" or "Unofficial."

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center Receptionist whose telephone number is (703) 305-4700.

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A. Johns
3 June 2004

ANDREW W. JOHNS
PRIMARY EXAMINER